



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Science

Sciences

Quebec Region

Canadian Science Advisory Secretariat
Science Response 2011/010

LABRADOR – NEWFOUNDLAND ISLAND TRANSMISSION LINK PROJECT– REVIEW OF THE GROUND FISH, PELAGIC FISH, SHRIMP AND SNOW CRAB SECTION FROM THE EA REPORT

Context

Nalcor Energy is proposing to develop the *Labrador – Island Transmission Link Project* as part of the larger project of establishing a High Voltage Direct Current (HVdc) transmission system extending from Central Labrador to the Island of Newfoundland's Avalon Peninsula. In preparation for, and support of the Project, Nalcor Energy has submitted to Marine Habitat Protection Section of Fisheries and Oceans Canada in Newfoundland a series of environmental assessment reports between November 10, 2010 and June 4, 2011. The report entitled "Marine Fish and Fish Habitat in the Strait of Belle Isle: Data Review and Compilation" has been completed with the objective to gather, summarize and present existing and available information on fish and fish habitat in the Strait of Belle Isle. As the Quebec Region is responsible for the management of some commercial species in the area covered by the project, the Fish Habitat Management Branch (FHMB) in Newfoundland solicited the regional DFO Science Branch at the Maurice-Lamontagne Institute (MLI) to review only the sections on groundfish, pelagic fish, shrimp, snow crab and some species at risk for which Quebec region have information to validate whether the information submitted by the consultant is accurate. The request was forwarded to the Science Advice, Information and Support Branch (SAISB) July 8, 2011, and a response was required by July 28, 2011. An SSRP was used due to the short deadline for advice.

This Science Response report is from the Fisheries and Oceans Canada, Canadian Science Advisory Secretariat, Regional Science Special Response Process (SSRP) of July 13-29, 2011, Review of the Environmental Assessment report on marine fish and fish habitat in the Strait of Belle Isle.

In general, the information presented in the environmental assessment report is a complete and thorough review of the available literature. Some points, however, were raised to put the information into perspective and to clarify certain aspects.

Analysis and Responses

The comments provided by the Fisheries Science and Aquaculture Branch, MLI, are related to sections 3.3.1, 3.3.2, 3.3.3.2, 3.3.3.4, 3.3.4.1 and 3.3.4.2 only, and for which we were invited to provide comments as an expert authority.

3.3.1 Demersal fish (groundfish)

3.3.4.1 SARA Designated Marine Fish Species

3.3.4.2 COSEWIC Designated Marine Fish Species

Data limitations¹:

The Strait of Belle Isle Study Area (Figure 2.1) comprises NAFO unit areas 4Ra and 4Sw (Figure 3.17). However some data is not available for the Lower North-Shore of Quebec which spans 100 km of coastline. More specifically:

- 1) For both groundfish surveys (DFO in August and Sentinel in July) the waters of 4Sw are not sampled because on un-trawlable grounds.
- 2) For the August DFO survey, the sampling of 4Ra is not consistently sampled every year because of lack of vessel time and breakdowns. This is not an issue for the July Sentinel survey.
- 3) The data presented in figures 3.18, 3.22 and 3.26 are based on the Community Coastal Resource Inventory (CCRI). This is based on data for Newfoundland and Labrador, no equivalent information is presented for the Quebec Lower North Shore. We don't know if such information is available for Lower North Shore.

These limitations should be pointed out explicitly in the report as some readers could be led to think that there is no fish in the Quebec Lower North-Shore, which is far from being the case.

Migration issues:

The Strait of Belle Isle Study Area is a prime area for many groundfish species, some with limited annual migrations such as lumpfish and wolffish, while others show widespread annual migrations such as cod. This means that their presence in the study area varies on an annual basis. It is also important to note that the Strait of Belle Isle is part of the range of many groundfish species listed in the report, the Strait should be considered like a "dead end" for Gulf based species, *i.e.* these species do not migrate through the Strait to reach the Atlantic Ocean. This should also be explained in the report.

Atlantic halibut:

Due to the decline of other groundfish stocks (e.g. cod, redfish), interest for commercial fishing on Atlantic halibut has increased. This species is very lucrative for the fishing industry even if the landings are low compared to other groundfish species. In 2009, the commercial exploitation of Atlantic halibut was spreading just at the entry of Belle-Isle Strait (ref.http://www.dfo-mpo.gc.ca/Csas-sccs/publications/sar-as/2011/2011_012-eng.pdf) . The information about this species obtained from groundfish surveys is not complete because the bottom trawl used for the survey is not very efficient to catch halibut. To improve the report, a specific section about Atlantic halibut should be added.

3.3.2. Pelagic fish (Capelin, Atlantic herring and Atlantic mackerel)

To have a more complete picture of the pelagics distribution in the Strait of Belle Isle area, data from the commercial fishery (fixed and mobile gears) and the herring acoustic survey should be added. The reference for mackerel is:

http://www.dfo-mpo.gc.ca/csas-sccs/publications/resdocs-docrech/2009/2009_025-eng.htm - Table 7 for 4Ra and 4Sw, Figure 14 for the locations of the purse seine catches.

¹ This section also applies to pelagics and invertebrates.

More specific comments are below:

Page 60, last paragraph: The Atlantic mackerel do not spawn in the Strait of Belle Isle (they are moving there after the spawning season). However, mackerel use the Strait to move from the Gulf to the east coast of Newfoundland (the opposite is also true) at the end of the summer and during the fall.

Page 61, Figure 3.22: Herring and capelin are spawning all along the Quebec and Newfoundland coasts (not only in the small areas presented on the map). Again, mackerel do not spawn in the area.

Page 62, second paragraph: We do not know the percentage of the population that spawns offshore and in deeper waters so it is incorrect to mention that "*a small component of the population remains in offshore areas and spawn*".

Page 63, Figure 3.23: The locations of the traps that are present on both sides of the Strait should be added to this Figure. This will give a better idea of the species distribution. Data from the Sentinel and DFO research surveys are not complete as these surveys are conducted after the capelin spawning season.

Page 64, second paragraph: Savenkoff et al. 2006 is not the right reference to use in this case. McQuinn et al. 1999 should be cited instead.

Page 65, Figure 3.2.4: Data from herring acoustic survey doesn't seem included in the figure. These data can be found in the following references:

http://www.dfo-mpo.gc.ca/Csas/Csas/publications/resdocs-docrech/2010/2010_049_b.pdf -

Figure 10

http://www.dfo-mpo.gc.ca/Csas-sccs/publications/sar-as/2011/2011_007-eng.pdf - Figure 16

Page 66, third paragraph: It is mentionned that "Gregoire et al. (2006) *demonstrated that small and large.....*". Gregoire and al. did not demonstrated that, they simply used data from Savenkoff.

Page 66, last paragraph: There is no DFO research surveys conducted specifically on mackerel in the northern Gulf. Mackerel are simply a by-catch of the DFO and Sentinel surveys.

3.3.3.2 Snow crab

3.3.3.4 Shrimp

Page 79, first paragraph: The term "queen crab" is outdated. Reword last sentence "*Snow crab generally prefer **cold, usually deep waters.***"

Page 79, second paragraph: It is mentionned in the text than "*Large, commercial size, male crab are generally found on mud or sand substrates, whereas smaller crab are associated with harder substrates (DFO 2005b).*" It is really the intermediate size crab that may be associated with harder substrates; the first few benthic stages are associated with soft mud (see Dionne et al 2003 Mar Ecol Prog Ser 259: 117-128)

Page 79, third paragraph: It is mentionned in the text than "*males will continue to moult until they reached their terminal moult size, between 40 to 115 mm carapace width (DFO 2005b).*"

Terminally molted males may be considerably larger. Reword sentence: "*In spring, mating pairs migrate to shallow waters.*" Replacing "migrate to" by "can be found in".

Page 79, seventh paragraph: Reword sentence: "*This suggests that there is a fairly large density of small (non-commercial sized) individuals, **indicating** overall biomass stability.*" Replaced "**indicating**" by "**contributing to**". It is mentioned that "*Capture locations of snow crab in the Study Area from 1999 to 2009 by DFO scientific surveys and Sentinel fisheries are presented in Figure 3.30.*" This figure does not appear to include data from the beam trawl survey conducted by the Quebec Region. That survey does not extend into the Strait but has in the past covered the northern part of the Esquiman Channel.

Page 83, first paragraph: It is mentioned that "*In the Gulf of St. Lawrence, shrimp occur at depths from **150 to 350 m** (DFO 2010a).*" This depth distribution characterizes northern shrimp (*Pandalus borealis*); the many other shrimp species that can be found in the Strait distribute themselves at depths ranging anywhere from the low intertidal down to 100-150 m.

Page 83, second paragraph: It is mentioned that "*Shrimp are unique in that they change sex over their life cycle,...*". Not all shrimp species change sex. For example, *Sclerocrangon boreas* which is common in the Strait does not. The rest of this paragraph is relevant to northern shrimp, but many of the other species in the Strait do not conform to this description.

Scope of the document:

The title of the document is entirely consistent with its content, however we would have expected some additional information on how the various groundfish species could be impacted by the transmission link itself. An examination of threats, attenuation methods related to the project would have been very useful. Is such a document forthcoming?

It would also be interesting to make a literature review of the threats as they may affect groundfish. Topics such as:

- 1) Electromagnetic fields produced by the cable on groundfish behaviour and survival.
- 2) The digging process affecting fish distribution through high noise production and re-suspension of the sediments.
- 3) The potential for heat release from the underwater cable.
- 4) The potential that the cable be reached by icebergs, trawling and scallop dredging.

Conclusions

The scientific assessment provided is based on the information that we were requested to review only. In general, the information presented in the environmental assessment report is a complete and thorough review of the available literature². Some points, however, were raised to put the information into perspective and to clarify certain aspects.

² The information presented is extracted from data used in stock assessments (Research vessel surveys, Sentinel data (fixed and mobile). These stock assessments and monitoring data are conducted on a yearly basis and as such will always be lagging in any report. The report is from November 2010 and the data presented stops in 2009 whereas data is actually available for 2010, the 2011 data should be available by the end of the year. This, however, should not affect the report.

Some questions still remain:

- 1) How does this project rate compared to other underwater electrical initiatives (length, icebergs, fishing, voltage...)?
- 2) Could a tunnel be considered in order to mitigate some effects?

Contributors

The following persons have reviewed the report:

Diane Archambault	DFO Science, Mont-Joli
Charley Cyr	DFO Science, Mont-Joli (editor)
Alain Fréchet	DFO Science, Mont-Joli
François Grégoire	DFO Science, Mont-Joli
Bernard Sainte-Marie	DFO Science, Mont-Joli
Louise Savard	DFO Science, Mont-Joli

Approved by

Serge Gosselin
Director, Scientific Advice, Information and Support Branch
Maurice-Lamontagne Institute, Mont-Joli, Québec

Date: August 23, 2011

Sources of information

Sikumiut Environmental Management Ltd, 2010. Labrador – Island Transmission Link. Marine Fish and Fish Habitat in the Belle Isle Strait: Information Review and Compilation. Rapport présenté à Nalcor Energy, novembre 2010.

This Report is Available from the:

Center for Science Advice (CSA)
Quebec Region
Fisheries and Oceans Canada
Maurice Lamontagne Institute
C.P. 1000, Mont-Joli
Québec (Canada)
G5H 3Z4

Telephone: 418-775-0825

Fax: 418-775-0679

E-Mail: Bras@dfo-mpo.gc.ca

Internet address: www.dfo-mpo.gc.ca/csas-sccs

ISSN 1919-3750 (Print)

ISSN 1919-3769 (Online)

© Her Majesty the Queen in Right of Canada, 2011

La version française est disponible à l'adresse ci-dessus.



Correct Citation for this Publication:

DFO. 2011. Labrador - Newfoundland island transmission link project– Review of the groundfish, pelagic fish, shrimp and snow crab section from the EA report. DFO Can. Sci. Advis. Sec. Sci. Resp. 2011/010.